High-Speed Internet Connectivity in North Carolina's Distressed Urban Areas

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Prepared for
the North Carolina e-NC Authority

April 2005

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ACKNOWLEGEMENTS

The authors would like to thank the North Carolina e-NC Authority for its support of this project. We would also like to acknowledge the Authority's Executive Director, Jane Paterson, and staff members Angie Bailey, Charles Pittman, Donna Sullivan, Deborah Watts, Joanna Wright, for conceiving this study and for providing thoughtful comments on the focus group questions and on the draft final report. Debra Hill, Executive Assistant at the Center for Urban and Regional Studies, provided valuable assistance in arranging the focus groups and preparing this report.

EXECUTIVE SUMMARY

Although much has been written in the popular press about the "digital divide"--society's haves and have-nots in high-speed access to the internet--little is known about the conditions at the local level that cause this gap to persist. This report summarizes the views of local stakeholders in four North Carolina urban areas on the factors that deny significant portions of the urban population--those living and running small businesses in economically distressed neighborhoods--from participating fully in the "knowledge economy." By developing a better understanding of these factors, local and state policymakers will be better equipped to develop programs and target resources to improve high-speed internet access among these urban populations. As North Carolina's regions continue to adjust to the economic challenges and opportunities of a global economy, the full connectivity of the state's residents and businesses to the information economy will be critical to growth and prosperity.

This report summarizes the findings from focus groups conducted by the Center for Urban & Regional Studies (CURS) at The University of North Carolina at Chapel Hill in four North Carolina urban areas: Charlotte, Durham, Asheville and Wilmington. One focus group in each city concentrated on connectivity issues among residents of distressed communities while a second group concentrated on connectivity among small businesses. The focus group participants were chosen on the basis of their familiarity with connectivity issues for residents and small businesses in the economically distressed urban neighborhoods of their communities. Connectivity in this context refers to both high-speed internet access and high-speed internet usage. The focus groups, which were held in March 2005, drew professionals from a variety of institutions and service organizations including consumer advocacy and community development organizations, local government service providers, local chambers of commerce, small business development and technology centers, small business counselors, and the like. A total of 82 persons participated in these focus groups.

The focus group participants were asked to address questions on high-speed internet access by type of service and location (home, business, or elsewhere), the adoption of the internet by different subsets of the population, the frequency of use of various types of internet applications, barriers to connectivity, and suggestions for

improving connectivity in terms of awareness, access, and training. The key findings from these groups are summarized below. Connectivity issues for households and small businesses are discussed separately.

CONNECTIVITY OF RESIDENTS IN DISTRESSED URBAN NEIGHBORHOODS
Key Findings

High-Speed Internet Service Availability to the Home

The consensus among the focus group participants in all four cities was that the availability of high-speed internet service to the homes of residents in distressed areas of their cities was similar to that for residents throughout the urban area as a whole and typically included cable modem, DSL service or both. Although there was much interest in providing wireless networks in these areas, to-date these networks were largely limited to the central business districts. Satellite high-speed internet service was generally dismissed by the focus group participants as "too expensive" for residents of distressed neighborhoods.

Several participants stated that an exception to widespread high-speed internet availability was in older public housing developments. Many of the residents of those developments did not have access to high-speed internet service in their homes.

Level of Use of High-Speed Internet Service

Although high-speed service was generally available, actual usage in the residences of distressed neighborhoods was characterized as "very low" by participants in all four focus groups. In some neighborhoods, participants had the impression that not more than 10% of residents subscribed to a high-speed service.

When asked about differences in usage by race and ethnicity, high-speed internet usage in the home was described as less prevalent among African American and Hispanic households. The reasons given for this included income constraints, low education levels, and language barriers.

Usage levels were also said to vary by age. School aged children in distressed households were described as the most computer literate members in the households. Nevertheless, the availability of a computer in the homes of students in some low-income neighborhoods was said to be less than 50%. Individuals in their 20's and 30's were seen as better-connected than their older cohorts, often using the high-speed internet for job search and other information gathering. Middle-aged individuals and the elderly were the least likely to use high-speed internet in the home. Participants of all four focus groups described the usage and knowledge of older household members as "very limited."

Internet Applications Most Commonly Used

Interest in various types of internet applications was said to differ most by age group. Participants in all four focus groups described the typical young person's internet interests as centering on email, instant messaging, gaming, music, and shopping. Adults were more likely to use the internet as an information source, especially in searching and applying for jobs. Other information sought by adult residents of distressed neighborhoods included news,(all groups), library search such as Reference USA and NC Live (all groups), health information such as that found on NC Health Info (Durham and Charlotte), and local government, especially job postings, transportation schedules, school information, and information on individuals incarcerated in county facilities (all groups). Adults also sought out information on tax preparation, on-line GED coursework, on-line job training courses, and neighborhood chat groups. The last activity was particular to the Durham focus group. Focus group participants reported that residents of distressed neighborhoods were not commonly using the internet to seek information about or apply for various social services, either because these agencies weren't on-line or because residents preferred to seek these services in person

Barriers to High-Speed Internet Use in the Home

Participants mentioned several barriers to high-speed internet use in the home. These included:

1. The upfront costs of acquiring computer hardware;

2. The burden of monthly fees for cable or DSL internet service;

3. Resident lack of technical skills and sufficient general education, leading to a poor understanding of the benefits of owning a computer and using the internet;

4. Intimidation by the technology and the prospect of "getting set up" as well as the need for long term maintenance; and

5. Lack of time to get information and training on computers and the internet.

A number of other barriers were mentioned for certain subsets of the population including poor reading skills, limited English-language skills, physical handicaps, and social isolation.

Public Internet Access

Participants in all four cities indicated that low-income residents that wished to access the high-speed internet outside the home could do so in public libraries, community and recreation centers, job placement centers, after-school sites, senior centers and churches. Their impression was that by far the most prevalent and heavily used public access sites were the public library branches. The public access sites were generally inadequate, however, given the level of the demand. Participants felt that there were an insufficient number of computer stations, low staffing levels that prevented one-on-one assistance, short hours, and insufficient bandwidth that slowed service.

One of the major themes concerning public access that emerged from the focus groups was the heavy use of public library computers by the homeless. Participants

stated that webmail was a primary means by which the homeless contact family and friends.

A significant portion of the population in distressed neighborhoods was not using public access internet sites, according to participants. The reasons given for this phenomenon included long waiting times for a computer, poor transportation options coupled with inconveniently located sites, lack of knowledge of the location of the sites (except the public libraries), and embarrassment/fear of seeking help in a public place.

Particular barriers were noted among the African American and Hispanic population including historic underuse of the library, and in the case of Hispanics, an unwillingness to enter government affiliated public access sites and difficulty with English-language instruction.

Computer/Internet Training Availability

Basic training on computer use and the internet was available at most public access sites as well as a variety of educational institutions, especially the community colleges. The programs were generally free or very low-cost and were offered in a small-class format. Some one-on-one assistance was available on a limited basis, generally geared toward job-search or other just-in-time needs. A number of collaborations between the providers of public access, educational institutions, private industry, and community groups existed to serve the access and training needs of low-income residents.

Yet focus group participants felt that the availability of classes and one-on-one training was not sufficient to meet the demand. They indicated that additional resources were sorely needed for instructors, computer hardware, curriculum development, and course materials. Several focus group participants also indicated that many low-income residents were unaware of the availability of low cost computer and internet training and that targeted outreach should be a major priority.

Differences Among the Four Focus Group Cities

Participants in the Charlotte and Durham focus groups generally characterized their cities as having good geographic coverage of the low-income neighborhoods for both public internet access and training. They stated that collaborative efforts to increase digital literacy in the community by private industry, local higher education institutions and community groups were well underway. The consensus among the Asheville and Wilmington focus group participants, however, was that their low-income communities were not as well served in terms of public internet access and training. These participants stated that major capacity building efforts were required to serve the information technology needs of low-income residents including the provision of more public access computers and staffing in branch libraries, community centers, after-school sites, and churches.

GENERAL RECOMMENDATIONS FOR IMPROVING CONNECTIVITY AMONG RESIDENTS IN DISTRESSED AREAS

Reduce Costs

A number of participants felt that reducing the cost of monthly high-speed internet service to the homes of low-income families should be a long-term priority. Their suggestions for achieving this goal included increasing competition, investing in alternative technologies, and subsidizing the monthly fees of low-income residents. Participants also felt that policymakers needed to focus on decreasing the cost of acquiring and maintaining a computer in the home through such means as refurbished computer donation programs, low-interest financing and low-cost technical assistance.

Simplify the Technology

Several focus group participants made suggestions concerning the complexity of setting up and maintaining a computer and getting connected to the internet. These included investigating options such as “dumb-boxes” connected to central servers such as those employed in the Chapel Hill school system and web-TV technologies

that would build on existing hardware in the homes of low-income residents. They also stressed the importance of providing low-cost computer maintenance service, as many low-income residents were said to abandon their computers when they malfunction.

Improve the Availability and Awareness of Public Access Sites

Many participants felt strongly that policymakers needed to increase the capacity of public access sites through better funding for hardware, staff, training materials and bandwidth. In Asheville and Wilmington, participants also felt that increasing the geographic reach of public access by opening more public access sites in distressed neighborhoods was essential. Participants in all focus groups stressed the need to increase awareness of existing facilities through coordinated referral and marketing efforts.

Mobilize and Coordinate Volunteer Resources

Focus group participants also felt that policymakers needed to capitalize on the wealth of "willing and able" technical people employed by private industry and higher education in urban areas to provide training and other connectivity assistance to low-income residents. They also expressed the related need of connecting organizations that serve the technology needs of low-income residents with these volunteers through a central clearinghouse or a city-wide volunteer coordinator.

IDEAS FOR HOW THE e-NC AUTHORITY CAN IMPROVE CONNECTIVITY AMONG HOUSEHOLDS IN DISTRESSED AREAS

Provide First Steps

Several participants felt the e-NC Authority could help local communities to determine the initial steps that should be taken to address the problem of connectivity in their communities. Specifically, participants requested planning templates, information on best practices and model programs to help communities start new programs and improve existing programs. By capitalizing on e-NC's experience with

programs in rural areas and its ability to gather information on urban practices across the country, participants felt their localities could avoid "reinventing the wheel".

Meet Information Needs

Participants in all of the focus groups indicated a desire to have e-NC conduct research that collects data directly from the residents of the target neighborhoods. They stated that many of their fund raising and public awareness efforts are dependent on providing local data-based evidence of connectivity needs. Currently, much of this information was not available and resources at the local level were insufficient to conduct this type of research.

Provide Assistance with Grants

Participants stated that they would like the e-NC Authority to provide them with assistance in identifying grant sources and preparing grant applications. They also identified a number of grant needs and cost-reduction assistance that could come directly from e-NC. These included: 1) planning grants similar to those currently offered in rural North Carolina counties; 2) seed-money for pilot programs, especially those undertaken by public-housing entities and other community groups; 3) financial assistance in bulk-purchasing of hardware; 4) assistance in achieving rate reductions for internet service at public access sites; 5) funds for developing outreach materials; and 6) financial assistance in the development of more extensive municipal wireless networks.

Provide Coordination of Resources and Convening of Stakeholders

Several ideas surfaced in the focus groups about e-NC helping to coordinate resources and organizations working to improve connectivity issues in distressed neighborhoods. These included: 1) developing an umbrella organization to coordinate different public access centers and to be a source of shared information and practices; 2) providing a training coordinator, not necessarily tied to one agency that could provide assistance "out in the various communities"; and 3) developing a

connectivity discussion and resource site on the internet for stakeholders throughout the city.

Raise the Priority of "Connectivity of Low-income Urban Residents" as a Political and Economic Development Issue

Participants in the focus groups felt strongly that an important role for e-NC was to assist local leaders in raising the visibility of "connectivity issues in distressed urban areas" at the state level. In this regard, participants felt that e-NC was best suited to "making the case" for the importance of connectivity to economic development in the state. Specifically, they requested that these efforts focus on increasing competition between internet providers, lowering barriers to entry for non-profit and municipal broadband providers, finding a "home" for a line-item in the state budget for connectivity, providing funding assistance for local Wi-Fi networks, and linking connectivity to existing community development programs.

CONNECTIVITY OF SMALL BUSINESSES IN ECONOMICALLY DISTRESSED URBAN NEIGHBORHOODS

Key Findings

High-Speed Internet Service Availability to Small Businesses

Like households, the general opinion in all four cities, was that small businesses had a least one type of internet service available, DSL (residential or business-grade), cable or both. Participants felt that the choice of provider for small businesses, if they could afford internet service at all, came down to differences in costs and quality (speed). Wireless service was generally not available to these neighborhoods unless they were adjacent to central business districts. Dedicated line T1/T3 service was not available to all areas of the cities and even where available, was prohibitively expensive for many of the small businesses.

Level of Use of High-Speed Internet Service

Although high-speed service was generally available, the consensus was that small businesses in these neighborhoods had low levels of connectivity at their premises. A typical focus group comment was that among all small businesses in their city,

perhaps half were connected, but that this figure was far *less* for businesses in distressed neighborhoods. Connectivity was said to be lowest among minority-owned firms, firms in industries with low barriers to entry, firms serving local (low-income resident) markets only, firms whose activities were primarily field-oriented such as small building contractors, and firms with older owners.

Applications Used by Small Businesses

Focus group participants reported a variety of e-business and e-government applications that were sought by the small businesses that they served. These ranged from just-in-time needs like tax preparation, funding searches, and on-line registering for government bidding opportunities, to longer-term needs such as market research and business planning assistance on-line. The need to register for on-line bidding opportunities was mentioned as a frequent means by which small business owners were led into the world of technology. Participants mentioned that their small business clients were increasingly aware of the need to "get their name out there" on such services as www.matchforce.org.

Business planning and market research were also of major interest to the small businesses served by our focus group participants. Some of the most popular requests at the libraries according to participants were for on-line data resources such as ReferenceUSA. Participants also frequently referred their small business clients to www.sba.gov and www.FirstGov.gov for information on sources for start-up grants and small business financing.

Generally, focus group participants found that their small business clients weren't willing to take the time consuming and expensive step of developing and maintaining their own website until they had they had been involved in some of the on-line activities mentioned in the prior paragraphs and used email extensively to communicate with their customers and suppliers.

Training Availability

Participants indicated that training on computer use, basic internet, and select business internet applications was available at community colleges, small business development and technology centers (SBDTCs), community development corporations (CDC) business incubators, minority and women-owned business centers, Service Corp of Retired Executive (SCORE) offices, work-force development sites and in some cases, the public library. Advanced content, such as web authoring and e-procurement, was offered out of the community colleges and SBDTCs. Training ranged from small class formats to one-on-one counseling at no or very low cost.

Participation in these training programs by businesses in low-income neighborhoods was considered very low compared to their peers from the urban area as a whole. The reasons cited for this included: time constraints; mismatches between training programs and particular needs of businesses in low-income areas; and lack of coordinated outreach and referral. With respect to the “poor fit” between training and needs, participants often mentioned that training courses were too long and offered at inconvenient times relative to the business owner’s availability. Others felt that more emphasis needed to be placed on helping clients to become connected via mobile devices such as cell phones and PDA’s, as these were already used by a number of these businesses. Finally, several focus group members cited lack of trust of government programs, particularly for Hispanic businesspersons.

Barriers to Connectivity

Two of the most commonly mentioned barriers to high-speed internet use among small businesses were: 1) a poor understanding of the costs and benefits of connectivity; 2) and resistance to change. Several participants commented that, until a business owner found that growth couldn't be met through traditional means; there was no motivation to connect to technology. Participants said that small businesses needed to understand the value added of having a website and how much additional revenue was "out there" for those businesses on-line.

Lack of time for existing business owners was another issue mentioned by a majority of the participants. Many small business owners were said to be so busy that they had little time to put systems in place or participate in training.

The high costs of equipment, monthly internet access, and web-site development were also commonly mentioned barriers to connectivity. A number of participants made statements to the effect that clients could not afford the "$80 or so" per month cost of basic cable or DSL service. Further, lack of access to affordable equipment (refurbished computers for instance) and readily accessible information about hardware choices also imposed a burden according to participants. Finally, the high upfront costs of website development were mentioned by participants.

GENERAL RECOMMENDATIONS FOR IMPROVING CONNECTIVITY AMONG SMALL BUSINESSES

Create Demand

Participants felt a major focus should be on creating the demand for high-speed internet among small businesses. This included showing small businesses the specific ways that they could benefit with examples from their peer group and a one-on-one review of the potential impact on their business. Customized training and outreach to specific industry groups (contractors, retailers, etc) was also suggested including teaching field-oriented businesses how to connect through mobile hardware such as cell-phones and PDA's, if appropriate.

Reduce Connectivity Costs

Another suggestion focused on marshalling more resources to try to reduce the costs of connectivity for small businesses. This included providing more attractively priced refurbished computers, offering start-up grants for getting connected and developing a website, and providing low-cost technical assistance focused on security, troubleshooting, and maintenance.

Provide More Public Access Sites for Small Businesses

Funds for more community facilities that offered free public access targeted to home-based businesses and other small businesses in distressed neighborhoods were called for in Asheville and Wilmington, where geographic coverage of public access was considered inadequate. Specifically, start-up funds were needed to buy equipment, get on-line and train staff.

Improve Educational Offerings

Participants called for better educational offerings through more short courses that accommodated the time constraints of small businesses. They also suggested developing a coordinated sequence of basic courses that provide the background needed for small businesses to meaningfully engage in the one-on-one counseling services that were available through venues such as SCORE and community college small business centers.

Improve Outreach

A final means identified for improving connectivity for small businesses in distressed areas of the city was to improve outreach. This involved obtaining more information about the small businesses in low-income neighborhoods in order to do better targeting of resources and programs. Participants also wanted a small business internet self-help guide that includes a listing of community resources to assist in getting connected.

IDEAS FOR HOW THE e-NC AUTHORITY CAN HELP IMPROVE CONNECTIVITY AMONG SMALL BUSINESSES IN URBAN AREAS

Provide Research, Best Practices, and Model Case Studies

Participants indicated that one of the major problems they encountered in trying to serve the small business community in low-income areas was their own lack of knowledge. This included in-depth knowledge about the connectivity status and needs of the local population of small businesses including those that were home-

based and those that were mobile. Participants requested that e-NC assist them in developing a centralized data base of small businesses located in the distressed parts of their cities. Participants also felt e-NC could be helpful in providing model case studies, model training curriculum for short courses, community toolkits and a list of best practices from around the country.

Provide Direct Funding of Programs

The focus groups identified a number of funding needs for e-NC to consider. These included funding connectivity outreach materials such as self-help guides and resources listings for computer training and technical assistance, provision of start-up grants to small businesses for equipment and software purchases that would be locally administered, funding start-up costs of public access in community facilities, and funding of a centralized training and outreach coordinator.

Address Other Needs

Other potential e-NC roles mentioned in the focus groups included: convening of a city small business advisory committee on connectivity needs, assistance in developing collaborations between the universities, large corporate sponsors and small business centers, lobbying for state tax credits for computer equipment purchases by small businesses in certain geographic locations within the city, and assisting focus group participants in identifying state and federal funding opportunities for funding connectivity programs in their community.

Conclusion

Without exception, the participants in the eight focus groups were very excited about the potential involvement of the e-NC Authority in the low-income neighborhoods of their cities. They considered the connectivity needs of residents and small businesses in these communities to be both pressing and complex, and therefore worthy of the attention of a statewide organization such as e-NC. Many of the participants were familiar with e-NC's activities in neighboring rural counties, and felt that e-NC's experience base and resources were well-suited to addressing connectivity issues in urban areas.

INTRODUCTION

This study looks at the digital divide in North Carolina from the standpoint of those who work everyday with residents of distressed neighborhoods and small businesses to connect them to the information economy through high-speed internet access. While facts and figures area useful starting point for identifying that portion of our urban population that remains unconnected to the high-speed internet, qualitative information is essential for understanding the root causes of non-participation, identifying specific needs of residents and small businesses in low-income areas with respect to technology-readiness, and developing programs to address these needs.

This study is a first step towards tackling the challenges and opportunities faced by state and local policymakers as they seek to make the high-speed internet available to everyone in North Carolina's urban areas. This effort goes far beyond providing the physical availability of infrastructure and includes such issues as overcoming the high financial cost of getting and staying connected, educating residents and small businesses on the potential benefits of connectivity in terms of improved economic prospects and other quality of life measures, and changing the perception of the high-speed internet as a luxury item out of reach of most low-income residents and small businesses.

Our report draws on information gathered from eight focus groups held in March 2005 in the cities of Charlotte, Durham, Asheville, and Wilmington. These focus groups were conducted by the Center for Urban and Regional Studies (CURS) with funding from the e-NC Authority. The purpose of the focus groups was to bring together stakeholders from these communities – community groups, educators, city and county officials, and corporate citizens – to ask about current levels of high-speed access and use among both households and small businesses, the obstacles to access and usage, what is currently being done to improve access and usage and what role the e-NC Authority might play in expanding access and usage.

The discussion in all the focus groups was spirited and content-rich reflecting a high-level of interest and excitement around the topic. The focus groups unearthed a number of cooperative efforts already underway to address the problem of connectivity in distressed urban neighborhoods as well as a number of unmet needs that required both state and local attention.

This report starts with a brief description of study design and methods. Following that section is a detailed description of the findings that follows the order of the questions asked in the focus groups and is divided into two parts, one on residents and one on small businesses. The report concludes with a summary of the current state of connectivity in the population of interest and a listing of recommendations for future action by state and local policymakers. The appendices include the focus group questions (Appendix I) and a list of the participants and their organizations (Appendix II).

STUDY DESIGN AND METHODS

The study was designed to gather qualitative data on connectivity in economically distressed urban areas of North Carolina through focus groups. The purpose of the research is to provide information to assist e-NC in fulfilling its legislative mandate to report to the 2005 North Carolina General Assembly on activities necessary to be undertaken to enhance connectivity of residents and small businesses in distressed urban areas of the state. Connectivity in this context refers to both high-speed internet access and high-speed internet usage.

CURS staff gathered data for the study by conducted eight focus groups, one on households (also referred to as residents) in distressed neighborhoods and one on small businesses in distressed neighborhoods, in four cities: Charlotte, Durham, Asheville and Wilmington. The cities were chosen by CURS and e-NC to be broadly representative of urban areas in the different regions of North Carolina. The focus groups took place over a four week period in March of 2005. In all, 82 persons participated in these groups.

Prior to the focus groups, a set of discussion topics was developed by CURS staff in consultation with e-NC in the form of eight to nine questions (depending on the group, households or small business) addressing a set of interrelated issues on connectivity. These included internet availability by type of service and location (home, business or other), the level of internet usage by different subsets of the population, the nature of internet use by types of applications, barriers to connectivity, and suggestions for improving connectivity in terms of awareness, access, and training (see Appendix I).

The focus groups lasted one and a half hours and included an introduction to the study by the CURS moderator, a discussion of participants' rights under the study

guidelines, self-introductions, moderator led discussion using the developed set of questions, and a brief moderator wrap-up. The focus groups ranged in size from seven to fourteen participants not including the moderator and a note taker.

The focus group participants were chosen on the basis of their familiarity with connectivity issues in the distressed urban neighborhoods of their communities. "Distressed neighborhoods" for purposes of this research were defined as areas characterized by high poverty and unemployment rates relative to their respective MSA averages. A set of 15 to 20 potential invitees was identified through a process of snowball interviews of local economic and community development officials, internet searches including review of conference proceedings and committees formed around the connectivity topic, and recommendations of e-NC staff.

Focus group participants for the "households" groups consisted of representatives from consumer advocacy and community development organizations (public, non-profit, faith-based, etc.), and staff of public access sites, existing technology training programs, and local government/service providers. Focus group participants for the "small business" groups consisted of representatives of economic and community development organizations (chamber of commerce, city economic development office, downtown development corporations), local community development financial institutions (e.g. Self-Help), small business and technology development centers (SBA), small business counselors (SCORE, minority/women owned businesses), state/local government business service providers (e-procurement, office of IT services, etc.) and other relevant organizations servicing the technology needs of small businesses in distressed urban neighborhoods. No overlap existed between the participants of the various focus groups.

It should be noted that the participant quotes contained in the "Findings" section that follows are anonymous and reflect our best attempt to faithfully reflect what was said by each of the participants, recognizing that the written notes did not record the discussions verbatim.

FINDINGS FROM THE HOUSEHOLD CONNECTIVITY FOCUS GROUPS

Availability of High-Speed Internet Services to Households in Distressed Neighborhoods

Focus group participants across all four urban areas reported that they were not aware of households in distressed areas of their communities that did not have access to at least one provider of high-speed internet services, even in economically distressed neighborhoods. The one exception noted to this wide-spread availability was public housing residents, an issue that we address in greater detail below. (A number of the participants also served adjacent rural counties and were careful to note the differences between their urban and rural constituencies, with a number of rural households still reporting that they had no access to any type of high-speed internet services). Generally, the distribution of cable services in the subject urban areas was considered the most wide-spread of all the services. DSL availability was considered less extensive, described as "patchy," for example, by a participant in Asheville.

Although there was much interest in the subject communities around the provision of wireless networks for high-speed internet use, large-scale efforts to-date had generally been limited to central business districts and had not benefited the vast majority of urban households, distressed or otherwise. A number of participants cited Philadelphia's efforts to become a Wi-Fi city, but couldn't point to specific public/private initiatives in their own communities to provide more comprehensive wireless networks. Satellite high-speed internet service was generally dismissed as "too expensive" to be a viable means to access the internet for residents of distressed neighborhoods.

A number of participants were concerned about the provision of high-speed internet services to public housing developments. Although it was reported that many public housing developments had community facilities with either dial-up or high-speed services, focus group participants felt that not all housing developments had high-speed availability to the individual housing units, particularly in older developments. There appeared to be a number of efforts underway to include high-speed internet infrastructure in new construction and redevelopment of older public housing developments. These efforts were reported to be initiated largely by local entities such as The Belmont CDC in Charlotte and Housing Authority of Asheville, rather than imposed by the program

requirements of Federal sponsors. Several participants noted that Hope VI was one of the few Federal programs that included wiring for high-speed internet to each housing unit as a program component. Participants in Asheville and Wilmington were particularly concerned that a number of the older housing developments were being "left behind" in the local efforts and that a comprehensive approach to providing high-speed internet access to public housing households needed to be undertaken in their communities.

Finally, participants in each of the four focus groups cited "lack of competition" among providers of high-speed internet service and its effect on cost as a major issue in high-speed internet availability. Specifically, participants mentioned that their communities had only one provider of cable modem service and one provider of DSL service. They further pointed to the fact that municipal provision of wireless broadband service and alternative technologies such as broadband over power lines were not yet available and therefore were not competitive factors. The perception of this issue was that it was beyond the scope of local efforts to improve connectivity and more effectively dealt with at the state and federal levels.

Usage of High-Speed Internet Services by Households in Distressed Neighborhoods

Usage of high-speed internet services in the homes of distressed neighborhoods was characterized as "very low" by participants in all four focus groups. In some neighborhoods, participants had the impression that not more than 10% of residents had access to high-speed in their homes.

Exploration of usage levels by different demographic groups generated comments about differences among age groups. School-aged children in distressed households were described as the most computer literate members of their households. Nevertheless, an Asheville participant stated that the availability of a computer (let alone high-speed internet) in the homes of students from a local middle school that drew heavily from low-income neighborhoods was "less than 50%." Children without a computer in the home were reported in all of the focus groups to have at least some access to computers and high-speed internet outside the home: at schools, community centers, libraries, homework

centers, or the homes of friend and relatives. Although there were a number of noteworthy long-standing public computer access and training programs targeting low-income families with school aged children such as CTEP in Durham, CAN in Charlotte, and the homework assistance after-school programs in Asheville, participants generally felt that these were imperfect substitutes for the availability of computers and high-speed internet access in the home. "There is so much concern amongst parents and staff about unequal (computer) access for our students outside the schools," according to one Asheville participant. This concern was expressed primarily in terms of a student's ability to compete with her peers, complete assignments, and acquire skills required for jobs in early adulthood.

Individuals in their 20's and 30's were seen as better-connected than older age cohorts. However, the following comment by one Charlotte participant was echoed by individuals involved in workforce training and job search assistance in the other urban areas studied. "People between 20 and 30 have access, but have never had the opportunity or need to use the internet, so they also require the basics. Individuals in this age group graduated from high school before computers were commonplace or required. The average profile of a client in our job center is mid-30s, and someone with no or very basic computer skills. However, these people 'gravitate' to the computers and can navigate through screens easily (once they are given some instruction)."

Middle-aged individuals and the elderly were the least likely to use high-speed internet in the home. Participants in all four focus groups described the usage and knowledge of older household members as "limited." Assistance targeting these populations often started with basic "how to turn on and use" computer instruction. Often the first encounter with the internet stemmed from some "just-in-time" need such as applying for the new Medicare discount card. A number of senior centers with internet access had reported a spike in interest from seniors interested in applying for the discount card. Generally, the participants felt that older individuals were far more receptive to using the internet than they had been just several years earlier. "When the elderly come in (to the library) and learn to use it (the internet), they go to town. And then they stop coming because they've bought a computer" (Wilmington participant). Similarly, a representative from a local CDC noted that until recently, he needed to provide all the

information about the nature of reverse mortgages to interested seniors. Now he sees seniors, "…even 80 yrs. old, who come in fully prepared to make an application with information from internet."

When asked about differences in usage by race or ethnicity, high-speed internet usage in the home was described as less prevalent among African American and Hispanic households in distressed neighborhoods. African Americans were "not used to having a computer in the home" according to one Durham participant, a condition attributed to income constraints and low education levels among many of the adults household members. There was less agreement on the status of high-speed usage among the Hispanic population in distressed neighborhoods. One Charlotte participant, whose office was in an area with a high concentration of Hispanics, stated that many parents were working, could afford a cable connection and equipment, and had computers in their home. On the other hand, another Charlotte participant who worked with the poorest Hispanic households at a public access site observed that, "these families are struggling, so computers are foreign. Families we serve tend not to have computer access except through our program The Latino families we serve want ESL first, and later want computer courses, and they want an adult instructor there with them."

Usage by male and female household members was generally seen as converging. For example, though Durham participants felt that as a rule, more men were involved with computers, several local training programs teaching internet skills had higher female participation, including one targeting seniors.

Internet Applications Most Commonly Used

Interest in various types of internet applications among residents of distressed neighborhoods was found to differ most by age group. All four focus groups described the typical young person's internet interests as centering on email, instant messaging, gaming, music, and shopping. A Charlotte participant made the distinction between the level of computer literacy and information literacy of school aged kids. "There is not a deep awareness about the power of access to information. This is especially true if parents don't know. The question is, how do we get kids to understand the power and necessity of this tool (for information gathering rather than entertainment only)?"

Adults were more likely to use the internet as an information source according to participants in all of the focus groups, especially in searching and applying for jobs. "Employers are using the internet to screen, particularly for entry level jobs…so folks in distressed neighborhoods need to know how to use the internet. For example, Home Depots have kiosks in them for job applications, but nobody is there to help people use them. In our bi-weekly job clinic, many come in because they can't navigate the kiosk and want help with just that one application" (Charlotte participant).

Other information sought by adult residents of distressed neighborhoods included news, especially sports and Spanish language news such as that found on "Carolina Hoy" in Asheville (all groups), library search such as Reference USA and NC Live (all groups), health information such as that found on NC Health Info (Durham and Charlotte), and local government (especially job postings, transportation schedules, school information, and information on individuals incarcerated in county facilities, all groups).

Other internet applications sought by adults included tax preparation, on-line GED coursework, on-line job training courses, and neighborhood chat groups. The last activity was particular to the Durham focus group. "Because of RTP net, more and more neighborhoods are coming on-line, particularly in Durham, where they use can discuss their common problems." (RTP net is an on-line regional information source for the Triangle area and also hosts web-sites, email lists and discussion forums for non-commercial members.)

Focus group participants reported that residents of distressed neighborhoods were not commonly using the internet to seek information about or apply for various social services, either because these agencies weren't on-line or because residents preferred to seek these services in person. "None of our communications is done with clients via the internet. We found that in other organizations that do communicate with the internet, those people who weren't connected immediately become more distant. If all communication goes out via internet, it's a lot easier to forget the lone person who doesn't use it. So they get left behind" (Wilmington participant). "Even when we try to get people to use the internet to get information about social services, people usually just go to some agency and hope it's the right day. There is a push towards e-government,

but it hasn't really saturated down to the level of the distressed neighborhood. We have to teach folks about how these services work" (Charlotte participant).

Available Training in Computer and Internet Use

Focus group participants identified a number of primary internet training sources for residents of distressed neighborhoods. These included after-school programs and camps for school aged children (and sometimes their family members), and community colleges, job-link and other job placement centers, public libraries, community centers and senior centers for adults. For adults, training generally focused on basic internet and email use in a small class format. These classes were either free or of nominal cost. If fees were a problem for some low-income individuals, there were sometimes available subsidies such as vouchers provided by the local social service agency to pay for the cost of job-related community college computer training (Wilmington). Training in the public libraries, which in all cities were the primary computer public access sites (see below), ranged from minimal (Wilmington) to fairly extensive (Charlotte). The reasons cited for the differences were largely due to available financial resources. Sometimes these limited funds resulted in concentrating all of the computer training in one branch location as was the case with the Pack Library in downtown Asheville. Notably, Charlotte's public library system offered a number of computer classes in Spanish that were very well subscribed.

Individuals who were interested in pursuing a more in-depth knowledge of the internet were typically referred to the local community college. The community college system was considered by participants in all four focus groups to have the greatest breadth and depth of offerings in computer and internet training. These included classes on web-authoring, wireless networking, and internet security topics.

Often private industry would provide volunteer staffing and/or financial resources for the basic training programs mentioned above. Examples included the collaboration between Time Warner, Dell, and Bank of America in Charlotte's C.A.N. program, and IBM's provision of web adaptation technology to the Council for Senior Citizens in Durham. Residents of distressed neighborhoods were otherwise not able to take advantage of the training opportunities offered by private industry or for-profit

technology schools because they couldn't afford the fees. Another source of volunteers or low-cost trainers for programs serving low-income residents was local computer clubs. "MAIN (Mountain Area Internet Network, a non-profit ISP provider) was initially about keeping its provider rates low and providing digital literacy training. A lot of computer clubs provided volunteers – they are very active in Asheville with members who are primarily retired technical experts" (Asheville participant).

Generally, some of the most effective training programs mentioned across all focus groups involved collaboration of one sort or another between schools, local government, non-profits, private industry and community volunteers. This pooling of resources allowed a training program to identify potential users, refer them to a convenient training site, and provide the needed facilities, hardware, staffing, and curriculum on a sustainable basis. For example, the CTEP program in Durham is collaboration between the Parks and Recreation Department of Durham, the non-profit group Excellence by Choice, and a large number of corporate and non-profit entities provide equipment and material, funds and volunteers. The program was described as very successful by a number of Durham participants, having provided training in computer use to over 10,000 individuals.

Some of the training programs mentioned included one-on-one assistance to individuals. Although this form of training was universally recognized as the preferred means of effectively reaching low-income individuals with no prior experience with the internet, funding and staffing constraints prevented training locations from offering it extensively. The state sponsored job-link program, located in several sites in all four focus group cities, was an exception. Participants observed that job-link sites provided extensive one-on-one assistance in searching for and applying for jobs on-line and completing the on-line training required for some types of jobs. Other exceptions noted arose from particular events such as the closing of the Pillowtex plant in Kannapolis where a wide variety of resources were marshaled to retrain and place out-of-work individuals. "Our Dell Tech-Know program started when Pillowtex went under and adults where out of work without marketable skills. Dell started to give computers as well as a training curriculum and Kannapolis was the first site. Dell spent 16 hours

training teachers who volunteered and met with students two times a week for 'computer biology 101' training" (Charlotte participant).

The final form of internet training that focus group participants referred to was on-line or "distance" basic internet training such as Goodwill's "GCF Global Learning". Although many of these on-line programs were well-designed, participants felt that the majority of residents of low-income neighborhoods required some initial "hand-holding" by staff to successfully complete the program. The Hispanic population in particular, was observed to be far more receptive to programs with in-person training. "As distance programs are increasingly more common, our retention (of Hispanics) has gone down. Hispanic students drop the class when they find out that there is not a traditional teacher" (Charlotte participant).

Although there were a number of successful programs to train low-income residents, focus group participants felt that the availability of classes and one-on-one training was not sufficient to meet the demand. They indicated that additional resources were sorely needed for additional instructors, computer hardware, curriculum development, and course materials. Several focus groups also indicated that many low-income residents were unaware of the availability of low cost computer and internet training and that targeted outreach should be a major priority.

Location and Nature of Public Access Sites

Most public access sites also doubled as training sites, as mentioned in the previous section. According to focus group participants in all four cities, by far the most prevalent and heavily used public access sites were the public library branches, followed by after-school program sites, recreation and community centers, job assistance sites, churches, and public housing common areas. Creative solutions to public access were sometimes taken to ensure adequate geographic coverage. In Charlotte, one program moved into a local mall when it was determined that this location best served the surrounding neighborhood.

Geographic coverage was described as adequate in Charlotte and Durham and inadequate in Asheville and Wilmington. When asked about whether there was sufficient public access, an Asheville participant responded that there was not, "…especially not in

the right places." Another participant stated that the downtown library would not be adding more computers in the near future because they were at capacity in terms of space and staffing and computer access was more urgently needed "out in the community." Not all Asheville participants agreed that geographic coverage was inadequate, however. One pointed out that he felt that cultural barriers, not actual distance to the public access sites, limited many individuals use of public access sites. These cultural barriers were felt to be particularly evident among the minority communities. These and other issues related to "Barriers to Connectivity" are discussed in a section that follows.

When asked about the level of use of existing public access facilities in low income areas, there was consistent reporting of heavy use in all four urban areas. In Charlotte, a participant reported that, "usage between the various library branches didn't vary much from location to location – there is high usage in all branches. The libraries can't put enough PCs out there. They haven't saturated the existing demand, and therefore don't have a grasp of how much demand exists." The typical means of dealing with too much demand relative to existing computer capacity was to limit access by time, with patrons generally signing up for one hour slots in the libraries, and one to two hour slots in the job-link centers.

A few public access sites were described as poorly used. These were generally churches or community centers that had little or no staffing dedicated to assisting computer users. In other words, there was no training connection. "St. Stephens allowed clients to use computers in church to take internet tutorials on learning to be a security guard and training for other jobs, but there was no one to show clients how to use the computer or to answer questions" (Wilmington participant). "Hardware availability doesn't assure use – kids will use the computers independently, but not the adults without full time staff support engaged in hand-holding" (Durham participant).

One of the major themes about public access that emerged from the focus groups was the heavy use of public library computers by the homeless. Participants stated that webmail and cell phones were the primary means of contacting family and friends among the homeless population. "They (the homeless) fill Virtual Village (at the Main Library) first thing every morning, and usually each person has several e-mail addresses" (Charlotte participant). A similar phenomenon was noted in Asheville and Wilmington.

Downtown branches seem to be the primary locus of activity for the homeless both because of their high number of computers and their proximity to the social service agencies and homeless shelters that served this population.

Barriers to Connectivity

When asked about barriers to greater connectivity among residents of distressed areas, focus group comments pertained to either public access sites and training facilities or connectivity in the home. Connectivity limitations at public access and training sites were either due to inadequacies of the sites or the socio-economic conditions and attitudes of the residents themselves. As previously mentioned, participants in all groups said that library facilities and job-training sites were generally oversubscribed, often with long queues for internet access. Short-staffing at the libraries was also mentioned. Although there were often staff members dedicated to public computers and computer training classes, the need for one-on-one assistance by first-time users far outstripped the manpower available. One library staffer mentioned the "80-20" rule that she had observed. "Twenty percent of public access patrons in the library look to learn computers for the first time because of a general interest and because they know it would be beneficial over the long term. (These patrons would often attend classes at the library) The other eighty percent of first-time users come for 'just-in-time' needs such as applying for a particular job. Often this is the hardest time to serve them and get them to where they need to be (in terms of internet literacy). It is a one-time intervention point. It is too labor intensive for staff. They can't go over a resume for two hours" (Charlotte participant).

Other participants felt that the library was too restrictive in terms of rules governing usage of the internet. "Very few student age kids come in to the downtown library to use the internet primarily because it prohibits games and requires all children younger than 12 to be accompanied by an adult. Most of the middle and high school students who use the library extensively do so in suburban (more affluent) locations" (Asheville participant).

Other factors listed in the shortcomings of public access included narrow bandwidth ("one person streaming video, will slow everyone down on the network,"

Durham), quality of the hardware ("refurbished computers are not fast enough for the content so a lot of potential users are turned off with their first experience," (Durham) and inconvenient or unreliable hours of many of the non-library services (Wilmington and Asheville). Finally, participants in all four focus groups observed that residents of distressed neighborhoods were often unaware of alternative public access sites to the public library. Sites such as community centers and churches were often poorly publicized and signed. "It's not obvious what is there, when it's open, and what it's for– this information needs to be posted very obviously on the outside of the site" (Asheville).

Not all barriers to the use of public access sites had to do with inadequacies of the sites themselves. The socioeconomic conditions of the population also played a role including: lack of transportation (Asheville), lack of time ("not a priority, they're just getting by," Durham, Wilmington), high crime (fear of crime and going out at night, all groups), and a high incidence of physical disabilities, especially among the elderly, making computer use difficult (all groups). With respect to the issue of disabilities, it should be noted that a few public access sites had incorporated adaptive technology including several senior centers and Job-link. Generally, however, the cost of adaptive technology was considered prohibitive for most sites.

Attitudes and cultural barriers among the population served were also cited by focus group participants. Fear was mentioned in all four groups including "fear of how much they don't know" (Charlotte), fear of computers generally, fear of being embarrassed in a public place, fear of privacy breaches, and fear of governmental authority. Latinos in particular were observed to be unlikely to seek assistance in government run sites such as Job-link and community colleges. Participants who worked with the Latino population felt that they had been best served by programs run through churches located in Latino neighborhoods.

The other commonly mentioned barrier to greater use of public access sites and training facilities was lack of motivation due to poor understanding of the technology and its benefits. The following comments were typical. "I'm not sure everyone understands how much technology has advanced and the role it plays in every aspect of our lives" (Charlotte). "There's no understanding of the connection between computer literacy and social mobility. People are not making the connection between training and increased job

prospects. For example, the Chamber of Commerce notes the substantial presence of the plastics industry here and we can't provide the workforce because the requirements are highly technical" (Asheville). "There's a historic phenomenon of under use of the downtown library by minorities and the internet hasn't changed that" (Asheville).

The list of barriers to improving connectivity in the homes of low-income residents in all four groups was topped by the prohibitive cost of this connectivity. This included the costs of computer hardware, monthly high-speed internet service, and computer maintenance and repair. It was noted that the donations of refurbished computers through programs such as Teaming for Technology (United Way) and Tech Know (Dell) sometimes allowed poor households to acquire a computer at little or no cost, but that there was no relief for the monthly costs of high speed. Further, it was noted that many of the computer donation programs were oriented to homes with school-aged children and not available to the low-income populous generally. The high cost of computer maintenance and repair tied into the general observation that the hardware was too complex and intimidating for novice computers users in distressed neighborhoods.

A related observation offered in groups was the mismatch between computing hardware and the needs of the low-income population. Many felt that this population was better served with mobile technology such as cell phones and PDA's rather than fixed systems. Cell phones in particular were cited as widespread among the low-income population, especially young people, but ignored by low-income advocates as a potential source of connectivity.

Finally, many of the attitudinal barriers mentioned in respect to public access sites also pertain to home usage including: fear of technology, embarrassment, security concerns, and skepticism about the benefits of computers and the internet.

Suggestions for Overcoming Barriers to Connectivity

Suggestions for improving connectivity among residents of distressed neighborhoods spanned a number of fronts including improving affordability, simplifying the process of getting and staying connected, improving awareness and availability of public access, mobilizing and coordinating "tech" volunteers, and raising the priority

level of connectivity on the list of economic development goals of local and state governments.

Improving Affordability. A number of participants felt that reducing the cost of monthly high-speed internet service to the homes of low-income families should be a long-term priority. Ideas on how to lower costs included municipal provision of broadband services (Asheville), increasing competition through development of new technologies such as broadband over powerlines (Durham), developing more extensive wireless networks (all groups), negotiating for reduced-cost service to low-income households in cable franchise agreements (Asheville) and developing community/industry partnerships to provide broadband subsidies to low-income households (Charlotte and Asheville). One group member in Durham suggested: "We need to focus on greater involvement of our corporate citizens in providing a wireless network. Wireless can benefit low-income communities. It doesn't have to be for expensive laptop use only." A member of the Asheville group had a different idea: "My idea is to develop a partnership between schools, the public housing authority, and the cable company. Then approach a grant giver - a foundation for instance - to provide funds for a comprehensive program in Asheville attacking affordability issues for distressed households. One problem I foresee with this – how would we overcome the objections that this was anticompetitive?"

Reduce Complexity. Reducing the complexity of setting up a computer, getting connected, and maintaining the computer (staying connected) was a suggestion put forth by participants in all four focus groups. One Durham participant cited a program in Chapel Hill where the school system provided a server and put a "dumb box" in low-income student homes for internet access as a means of reducing costs, servicing, and lost files. A number of other participants mentioned that almost all homes had cable television. "Viable WebTV would reduce the hardware requirements for low-income homes. They could check out computer keyboards through the library system and the whole program could be done very cheaply" (Durham). Existing programs that donate refurbished computers to low-income resident, while commended by focus group participants, were noted for their lack of ongoing tech support. Thus, maintenance was identified as a "big-picture" problem. "People are stymied by the complication (of a

computer). If it breaks, they don't know how to fix it and they don't have the money to pay for it" (Durham).

Improve Awareness and Availability of Public Access. The following comments were typical of participants concerned about public access in their communities. "Charlotte has a lot of (connectivity) resources and people willing to help, but we need to deepen awareness of what is there, and connect people to it" (Charlotte). "We need to create a matrix showing who does what and matching organizations to problems and location" (Durham). The need to develop a comprehensive list of resources and disseminate it was a recurring theme. Participants suggested that this effort could be spearheaded by the United Way and included in their "211" call center resources, or compiled by local government and included on a regular basis in water or power bill mailings. One Durham participant suggested that this effort should also focus on creating demand amongst the "hard core" unconnected by providing information, emphasizing in bullet-point fashion, on "what the internet could do for you".

In terms of availability of public access, all focus groups felt that the libraries needed more computers, band-width, staffing and training resources. "The county library system needs funding for more staff. At the city and county level, we run our computer systems with half the level of technical support staff that you find in private industry" (Durham). Many participants also felt less pressure would be placed on library resources if computing resources in other types of public access sites were enhanced. "Day-time workers are an underserved group at our facility. We send them to the library because we close at five on weekdays and aren't open on the weekend" (Charlotte). "We need to look at programs already in place and push more connectivity through these – after-school homework assistance programs for instance" (Asheville). "The community center – this is already where the kids are hanging out. This is where kids should be reached in terms of (internet) training, not just access" (Charlotte).

Mobilize and Coordinate Tech Volunteers. All four focus groups described their communities as being rich in potential technical volunteers to assist low-income residents in becoming connected. According to participants, identification and coordination of these volunteers would go a long way in overcoming some of the staffing inadequacies at public access sites. "Our Research Triangle Park techies are underutilized. They are

willing to volunteer, but it's difficult to get the non-profits to say what they need exactly. Tech LinkUp is an existing resource in our community which is trying to match volunteers with non-profits" (Durham). "There are lots of computers sitting here empty waiting for trainers. Progress Energy, GE, the clinical research companies – there's not a deficit of volunteers. We just haven't communicated the need. We need someone to coordinate the process of meeting these needs" (Wilmington).

Who should take on this task? Focus group suggestions included the United Way (Wilmington and Charlotte), the Urban League (Charlotte), Americorp and Vista volunteers working for non profits such as Tech LinkUp and NetCorp (Durham), and a city government liaison officer (Charlotte and Durham).

Raise the Priority Level of Connectivity in Distressed Neighborhoods with Local and State Government. The need for leadership was an overarching theme in the focus group discussions of "solutions to connectivity barriers." Participants stated that leaders were needed at the state and local levels to champion connectivity among low-income urban households as a major economic development issue. "Connectivity as a topic is not usually thrown into the pot of economic development issues. It's newer. We need the younger generation in the state legislature to lead the charge" (Durham). "This needs to be an issue addressed by Crossroads Charlotte, a group composed of the 'Who's Who' of Charlotte business and civic groups. They are developing a vision of what the city and county will look like in the year 2015, given different factors, including the role of technology" (Charlotte). "Community Development Block Grants would be a potential source of funding for improving connectivity at the local level. But politics plays a major role. So far, connectivity is not a priority" (Durham). Participants expressed hope that the e-NC Authority could assist in these leadership development initiatives. (See further discussion below.)

How the e-NC Authority Can Contribute

Participants in all four focus groups were very excited that e-NC was conducting this study and expressed a strong desire to work with e-NC in solving the connectivity problems of residents in low-income neighborhoods in their respective cities. A number

of specific suggestions were made as to how e-NC could assist local stakeholders. These are provided below.

Meet Information Needs. Participants identified information needs along two lines: general "how to" guides and community specific research. First, participants wanted e-NC's help in determining the steps that should be taken to address the problem of connectivity in their communities. "What we need, and e-NC could provide, are planning templates, information on best practices and a couple of model programs to get us started. We're trying not to waste time here – we need help in performing a needs assessment - what kind of data do we need and how do we gather it" (Asheville). "We need case studies that let our communities know what is working" (Durham). The second informational role that participants identified was assistance in gathering data directly from the residents of the target neighborhoods. "E-NC could facilitate our money-raising with data-based evidence of (connectivity) needs and expected results" (Durham). "It would be amazing if e-NC could help us show outcomes in our community – does internet access impact unemployment? Does the access to computers after school for kids affect dropout rates or grades?" (Wilmington). "We need to collect data from those (student) households and find out what it would really take to get connected" (Asheville). "Let's ask…what if the internet was available within walking distance of homes in distressed neighborhoods, would they come?" (Wilmington).

Provide Technical Assistance with Grant Applications. Assistance with grant applications was a second area that focus group participants identified as a possible e-NC intervention point. "They could contribute the services of an e-NC staff person for consultation on developing grant requests, also passing on information about funding opportunities when they came up" (Durham). "They could help us with awareness of where funding opportunities are and help in writing grants – providing technical assistance" (Charlotte).

Provide Direct Grant Monies and Cost-Reduction Assistance. A third major role identified for e-NC could broadly be called direct grants and cost reduction. Participants felt that e-NC could provide: 1) planning grants similar to those currently offered in rural North Carolina counties; 2) seed-money for pilot programs, especially those undertaken by public-housing entities and other community groups; 3) financial assistance in bulk-

purchasing of hardware; 4) assistance in achieving rate reductions for internet access at public access sites; 5) funds for developing outreach materials; and 6) financial assistance in development of more extensive municipal wireless networks. "A state entity could help to lower rates for public facilities. Our public access sites have to pay business rates" (Durham). "We have E-rate funding available at the libraries – we need help in getting this subsidy at other public facilities and in reducing the administrative burden this program imposes" (Asheville). "Our focus right now is Wi-Fi connectivity. The library is looking at implementing a system-wide wireless network to offset the demand for public access computers. Citizens are asking for it. The library is creating a plan, but there is no funding in place – e-NC could help us with this" (Charlotte).

Coordinate Local Resources and Convene Stakeholders. A fourth area identified for e-NC assistance was coordination of resources and convening of parties interested in connectivity issues in distressed neighborhoods. "E-NC could help us put in a volunteer umbrella which would coordinate different public access centers and be a source of shared information and practices. The United Way is a good place to start for this. They are connected to non-profit organizations and connected to the businesses that provide the volunteers" (Charlotte). "We need a training coordinator, someone not necessarily tied to one agency that can provide content and continuity. Someone who is mobile and can go to providers and communities" (Wilmington). In terms of an e-NC convening role, the following comments were typical. "E-NC could sponsor a planning process or a focal point for all these groups–we need someone who could engage the community more." (Asheville) "We all know each other, but this is the first time we've talked about it (connectivity) together. Maybe a city wide task force would be good" (Wilmington). "We need someone to set up a connectivity discussion site for Asheville on the internet."

Provide Leadership at the State and Local Level. Finally, participants wanted e-NC to engage policymakers and planners at the both the state and local level in raising the visibility of the connectivity issue for low income urban households. A range of opinions existed on "what e-NC could do" in this regard. Participants in Asheville felt that efforts were best spent in trying to reduce connection costs by increasing competition between internet providers and lowering barriers to entry for non-profit and municipal broadband providers. Durham participants identified "linkage" as the issue. "The state

must provide a line item for connectivity in its budget. Who is going to take care of this? Commerce? Health and Human Services?" Charlotte participants said that local leaders were intent on pursuing a city-wide wireless network after the Philadelphia model and wanted state assistance in this effort. Several members of the Wilmington group were concerned about the lack of funds for community development in general and felt that "the digital divide" could be used to focus more attention and resources to low-income communities in general.

FINDINGS FROM THE SMALL BUSINESS CONNECTIVITY FOCUS GROUPS

Availability of High-Speed Internet Services to Small Businesses in Distressed Neighborhoods

All four focus groups addressing the connectivity needs of small businesses in their communities felt that high-speed internet connections of one type or another were available in distressed neighborhoods, even to home-based businesses. Participants reported that small businesses could avail themselves of DSL (residential or business-grade) or cable service, and that the choice of service often came down to cost differences. Transfer speed was also mentioned as a factor in service choice for small businesses in several urban areas. "Transfer speed is an issue and is not the same quality throughout the city, particularly beyond the central cit." (Charlotte). Another participant commented: "parts of Asheville haven't got good speed – with DSL it (speed) tends to be very localized based on distance from a transfer box" (Asheville).

Wireless broadband and dedicated line (T1/ T3) service were not listed as typical choices available for businesses in distressed neighborhoods. "The city has invested in WiFi in parts of downtown and the American Tobacco buildings have a private provider but otherwise wireless isn't available" (Durham.) (See findings from the household focus groups for other comments on wireless availability.) With respect to dedicated lines, one participant commented: "Asheville suffers from a lack of sufficient bandwidth for many types of businesses who want or need to use the internet extensively. The city received ERC funding for DS3 lines which provided bandwidth oriented to particular users – the hospitals, universities, and NOAA. This is an enormous pipeline available for people in those buildings and others located on the concentric loops around the hospital. But DS3 is not available to the community generally." (Asheville) In any event, participants noted that the cost of T1/T3 lines was generally prohibitive for the very small businesses typically found in low-income neighborhoods.

The variable affordability and quality of high-speed internet service in different neighborhoods within the same city was mentioned as a factor in a number of small business location decisions. Specifically, an Asheville participant worked with a number of mobile entrepreneurs with home-based businesses who were making decisions about

where to live partly based on the nature of high-speed internet availability. "The quality of internet service is often lower in distressed neighborhoods and discourages small businesses from locating there." (Asheville)

Usage of High-Speed Internet Services

When asked about the general level of internet connectivity among small businesses, the following comments were typical. "Among all small businesses, maybe half are connected, but for firms in distressed areas that number is much smaller." (Durham) "Many of these small business owners are older (50 plus), are leery of technology and barely have fax machines. They rely on conversations and handshakes for contracts." (Charlotte) A number of factors were identified that made firms in distressed areas less likely to be connected than those in other urban neighborhoods. The first of these, older average age of the owner, was mentioned in several groups. This distinction was also posed not just in terms of age of the owner, but how long the business had been in the community. "New migrants to the community are early adopters, with longtime businesses or single proprietors it's far more difficult (to get them connected)." (Asheville) A second factor which led to the poor connectivity of small businesses in low-income areas was that the customers of these firms, often household residents of distressed neighborhoods, had relatively low connectivity themselves and didn't demand that the businesses they dealt with use the internet. "Mom and pop" retail establishments were cited as typical of firms in this category. Secondly, focus group participants pointed out that many small businesses in distressed neighborhoods were in industries with low barriers to entry – technology wasn't necessary to "get started" and operate in the early stages. "An example is a woman who is a single parent starting a house-keeping business – she doesn't require the internet and may use the computer on a very limited basis, if at all. It's the same situation with painting businesses, and landscaping. They get bits of information off the internet but use physical resources and programs for financial and business planning. You can't simply tell them to download forms off the internet." (Charlotte)

A third characteristic identified by participants was the "field" orientation of many small businesses. High-speed internet adoption was more typical among

businesses with "sticks and bricks" assets. "Some of these small businesses don't understand that they can be mobile and still use the computer/internet." (Asheville) A Wilmington participant commented: "small minority construction firms are not connected. We try to get email access for them--they don't have it because they're older and mostly out in the field. It's all connection by phone using lots of voicemail." A Charlotte participant pointed out that if field businesses used the internet at all, it was limited to seeking out clients and suppliers. She felt they were missing out on the important opportunity of participating in bid contracts that went out over the internet (see "Applications" below).

Minority firms in general were felt to have lower connectivity, with one participant mentioning that less than 50% of his minority contractor clients used the internet for procurement. He pointed out that those that did use e-procurement served mostly non-local markets. Another participant commented: "ten percent of the minority firms we deal with don't even have email. We're focusing on getting this ten percent on dial-up email right now". (Asheville) The reasons mentioned by participants as to why minority firms were less connected had to do partly with reasons already discussed: older average age, local neighborhood customer base, and "field" orientation, as well as a general lack of education and lack of understanding for how the internet can help their business.

The education and work experience of minority and non-minority business owners was the final major factor discussed that determined which firms were connected in distressed neighborhoods. "We find that the new business owners we deal with are of two types, 1) entrepreneurs who want to start their own business and 2) people out of corporate America. They come at technology very differently. The second group uses technology more and will seek out assistance. People in the second group are go it alone types and don't look for help, so getting connected takes them longer." (Charlotte) "Our business owners adopt rapidly if they have technical backgrounds or some experience with the benefits of the internet." (Asheville)

Technical Assistance, Employee Training, and Public Access for Internet Use

Focus group participants listed a number of sources of computer and internet training for small businesses in their communities. These included community colleges, small business development and technology centers (SBDTCs), community development corporation (CDC) business incubators, minority and women-owned business centers, Service Corp of Retired Executive (SCORE) offices, work-force development sites and in some cases, the public library. The content of the training ranged from very basic – what the internet is and how to access it – to fairly advanced – web page development, maximizing the use of your PDA, government procurement, and so on. Most of the advanced content was offered out of the community colleges and SBDTC's where all of the other training sites would refer their clients after they had exhausted the basic resources that they offered. Training ranged from small class formats to one-on-one counseling at no to very low cost. Generally, cost factors prevented small businesses in distressed neighborhoods from using private business consultants such as web designers. "There's not much competition between private consultants and its way too expensive for most small businesses. These businesses almost have to do courses rather than take the customized approach that could be more helpful because of cost issues." (Asheville)

For those businesses uninitiated in internet use, classes were available in most of these venues that could be termed "introduction to the internet". "They (the beginners) don't want to take a twelve hour class on how to build a front page. They want to know what it's going to cost and what the benefits of the internet are. We also get into which type of company is going to use the internet for this aspect and which for another. So we try to teach the businesses about how to be smart shoppers for web technology." (Wilmington) Another example given for basic training was the local SCORE office that offered classes on "what the internet can do for you." The next step for small businesses was often oriented around developing a web page at which point the business could often receive one-on-one training as well as information through a small class format. "We don't have trouble getting businesses in (for web-page development training). We had 16 people last month and could probably get that many for each of our classes every other month. I try to give them examples of what it could cost and sometimes I help them

build or edit their website. There's a tool called Contribute that helps you edit a site with a very small amount of knowledge. So they can do it themselves for a very small amount of money." (Wilmington)

The other source of training on internet use was on-line training such as that offered at Small Business Administration and the Minority Business Development Agency. According to one SCORE representative, this software got very little use in the distressed communities unless someone was willing to walk them through the process of connecting to it and completing it. Assistance in completing internet tutorials was available in a variety of places including SBA offices, SCORE offices and community college small business centers.

Similar to the findings among households in low-income areas, small businesses who needed public access came most often to the public libraries. All of the libraries offered in-print and on-line resources for small businesses but only the Charlotte public library housed a small business center that was staffed by retired executives who provided one-on-one counseling as well as short courses on the internet for business start-ups. This program was much admired by other participants. "The high usage of the library by small businesses indicates that a lot of people are using this resource to find out what they need to know initially and where to go for it." (Charlotte) "They run their library like a small business incubator." (Durham "household" focus group) The other public access sites used most often by businesses in distressed neighborhoods were the business centers and incubators run by local CDC's. "Eagle Market Street has seven or eight computers that get moderate use by the black owned businesses that they serve in the neighborhood." (Asheville) Another participant stated: "affordability (of internet access) is an issue. One of the things our CDC has done is to provide the service in-house when they rent with us. We have an incubator, so those that don't have office space and are in our program have access and training." (Wilmington)

Lack of targeting of businesses in distressed neighborhoods for internet training and counseling was an issue that arose in all four focus groups. "Overall, these training programs are not well used by these types of businesses, mainly because folks don't know they exist. Popular programs are not necessarily popular with folks from distressed communities." (Durham) In Charlotte, a participant observed: "I'm not sure that we

(participants in the focus group) are targeting appropriately. For example Central Piedmont Community College has good internet classes, but many people do not know about them. We need to think about outreach opportunities." Several participants stated that there was a lack of knowledge about the "who and where" of small businesses in low-income communities for purposes of targeting and outreach. "I'm curious about how many businesses are located in the neighborhoods served by the CDCs. There are a lot of businesses we don't know about... many informal businesses." (Charlotte) "A lot of these businesses operate in a different economy…they feel if they're doing alright without technology, why fix it? The need is unseen." (Durham)

Internet Applications Most Commonly Used

Focus group participants reported a variety of e-business and e-government applications that were sought by the small businesses that they served. These ranged from just-in-time needs like tax preparation, funding searches, and on-line registering for government bidding opportunities, to longer-term needs such as market research and business planning assistance on-line. "Businesses come to us looking for bidding opportunities for city or state contracts. Many of them don't know what opportunities exist or how to access them. This can be a good way to lead people into technology. They can't send them a quote unless they are registered on-line." (Charlotte) "We tell our clients that they have to get their name in the marketplace. We're finding that large firms from private industry, such as some of the local banks, are going to the SBA website to find minority-owned firms." (Charlotte) "We use a match service - all bid searching is done on-line now – all government procurement is done that way. For instance www.matchforce.org can be used by firms wanting a connection to military procurement. They take a profile of the business and when a potential project comes in, they'll send out emails to businesses asking for bids." (Wilmington) In terms of searching for start-up funds, participants often referred businesses to www.sba.gov or www.FirstGov.gov for information on grants and loans. "There's a large amount of information on these websites and it's easy to use. There are a few things they can apply for on-line. With a client on the phone, I can take them where they need to go (through the website)." (Wilmington)

Business planning and market research were also of major interest to the small businesses served by our focus group participants. "Our most popular requests are for on-line data resources such as ReferenceUSA for businesses that are looking for business survey data and market information. They also want demographic information at the Census block level." (Charlotte) "With a client the other day, we pulled up the town of Burgaw and a list of children under the age of 18 and a list of the competitors so she could figure out how many people she could reasonably target for a new childcare business." (Wilmington) "Small businesses often use our Chamber of Commerce website to find links to local business resources and data and for finding lists of other businesses for networking purposes." (Wilmington) "Our CDC has a micro-loan program with BB&T targeted towards the business corridor in our service area. Part of the program's requirement is to develop a business plan, often requiring research on the internet. Usually these are service sector businesses such as an auto-repair shop that wants to expand into providing state vehicle inspections." (Charlotte)

Generally, focus group participants found that their small business clients weren't willing to take the time consuming and expensive step of developing and maintaining their own website until they had they had been involved in some of the on-line activities mentioned in the prior paragraphs and used email extensively to communicate with their customers and suppliers. "Even with younger businesses, there seems to be a time issue. They have email and web access for bidding and research, that kind of stuff, but many of them may not have a website because there's so much else to do – they know they need to do it, but just can't. If I help them build a website, it's usually a one-pager so that they can at least see that they can get it up there." (Wilmington.) There were other factors that played into the receptivity of a business to developing a website that are discussed in the following section. Participants felt that not all businesses "bought in" to the power of the internet as a marketing tool or felt that they needed a website as a "stamp of legitimacy."

Finally, of all the possible applications mentioned, the focus group members felt that on-line business management services such as on-line record-keeping or supply chain management were the least used by small businesses in distressed neighborhoods. "A lot of firms don't even do the proper record-keeping. The electronic medium can not

impose the financial discipline they need." (Durham) "Many businesses don't even have a computer to manage finances – maybe they have a bookkeeper keeping the books manually. Owners are so busy that they can't put these systems in place." (Charlotte)

Barriers to Better Connectivity

A number of barriers to better connectivity and productive use of the internet by small businesses were identified by participants. These included: lack of understanding of the benefits of technology, time constraints, costs, mismatches between programs and particular needs of businesses in low-income areas, and lack of coordinated outreach and referral. Poor understanding of the costs and benefits of connectivity for their business and resistance to change came up repeatedly in the four focus groups. "The home improvement/building industry is big here…it drives the local economy even when things slow down. These businesses work out of a truck and do quite well. Until a business owner finds that growth can't be met through doing business in the current way, then there is no motivation to connect to technology. We want to educate them about the need to have a good marketing plan in place for the slow times… taking steps to prepare for the lull." (Charlotte) "We need to figure out what are the value-added benefits to having a website. We need to tell these stories (successes of their peers, for instance)." (Charlotte) "There's not enough money put into the education of small business owners – how can the internet help your business specifically? How much additional revenue is out there? There is too much emphasis on equipment. This should be a second step." (Asheville) "It goes back to benefits. People have to understand how the benefits relate to their particular business and budget and what the long-term payoff is. It's a matter of looking at the internet pragmatically and not just dismissing it." (Wilmington)

Lack of time for existing business owners was another issue mentioned by a majority of the participants. "Many small business owners are so busy that they can't put systems in place. It's hard for them to step back and see the benefits of developing computing skills or a web page now when the time could be used for more jobs – there's an opportunity cost we have to overcome." (Charlotte) Other time related issues mentioned that particularly affect businesses in distressed neighborhoods were: 1) the fact that many small businesses are secondary to full-time "day" jobs of the business owner, 2) public

access and/or training sites may not be geographically convenient or open when business owner is available (nights and weekends), and 3) many small businesses people spent little time in an office or fixed location where they could access the internet.

The high costs of equipment, monthly access and web-site development were also a commonly mentioned barrier to connectivity. "Affordability is a big issue – the $80/month for business access is just the tip of the iceberg." (Asheville) Lack of access to affordable equipment (refurbished computers for instance) and readily accessible, unbiased information about hardware choices also imposed a burden. "We did a survey a few years ago asking our small businesses if they had computers and did they know how to upgrade them as needed. We found that there were major gaps in information sources available to these businesses. So often they were purchasing/leasing (inappropriate) computers based on word-of-mouth recommendations." Finally, the high upfront costs of website development were mentioned by participants. "For our start-up businesses, it's not necessarily the monthly price tag but the whole process of designing the website. They have to set aside hundreds of extra dollars." Although participants reported that there was some low-cost help available to assist small businesses in developing websites, this was generally only available for a limited "one-page" approach and didn't include ongoing expansion and maintenance needs.

Another barrier mentioned in the focus groups was a mismatch between the training available and the needs of the target population of firms in distressed neighborhoods. This included too much emphasis on business to business e-commerce and not enough emphasis on business to consumer applications that would be more appropriate for many of the firm in low-income areas. Another mismatch was an emphasis on connectivity through the use of personal computers when many of the small businesses owners were largely mobile and more likely to use a cellular phone or PDA. Finally, several focus groups, specifically Charlotte and Durham, felt that the training sites available to "distressed businesses" in their community were not sufficiently customized to the needs of those populations. "Many Hispanics lack trust in city or county run programs. They possess skills and talents but gravitate to people from their own community. At times they reach out (to participate in computer and internet training) but their dislike of paperwork and distrust of government often discourages that." (Charlotte) Durham

participants also mentioned that there was a lack of trust factor in the African American community's low participation rate in some of the available training programs. "Outreach and training need to take into account the cultural/attitudinal issues found in Durham. We've got to find them (the small businesses in low-income areas). They won't come to us."

Less than optimal coordination between all the parties "at the table" that provided services to small businesses was a further barrier to increasing connectivity among target small businesses. "We don't have a one-stop call center to get connected to resources. So many people may have to talk to five people before they get to the person or place they need to be. There are a lot of 'portals'- doors that lead you to the right place in Charlotte." (Charlotte) "There isn't anyone who provides the role of central contractor connecting the donors of refurbished/used computers with those businesses that need them. Someone just calls someone else they think might be able to use them." (Wilmington) "The city is pretty close to being a central source of information about public access for small businesses, but we're not totally there. We have some of the resources on our website and in a brochure." (Wilmington)

Suggestions for Overcoming Barriers to Connectivity

Create Demand. Many of the suggestions for increasing connectivity to small businesses in the subject communities centered on "demand creation" with a more customized approach. "Have university student interns show people at their workplaces during their daily routines where the internet could help them, so folks won't have to take a lot of time off. Create the interest, create the demand." (Durham) A number of participants felt that demand could be created through customizing connectivity solutions to the needs of specific industries. For example, a participant in Asheville pointed to a program in neighboring Madison County where they were putting farmers on-line at a designated public site with training in agricultural internet applications. "These programs have been wildly successful. We need a similar approach to some of the industries in urban areas." (Asheville, also mentioned by the Wilmington group) Other suggestions for creating demand included use of the media. "We need to utilize the mass media more effectively for publicizing the successes of various small businesses in becoming

connected and show how they got help." (Asheville) Finally, several focus groups identified peer business involvement in outreach as a potential solution to the lack of demand problem. "These businesses need to hear from their peers. There needs to be a program where reluctant non-users could talk to similar small businesses that were on-line in their community. That would make a big difference." (Wilmington) "I'm trying to use one of our barbershop clients as an example – showing how they are using the internet to email clients, manage schedules and order products." (Durham)

Reduce Connectivity Costs. Another suggestion focused on marshalling more resources to try to reduce the costs of connectivity for small businesses. "We now have a company that has a contract with the county to refurbish its old computers and resell them at attractive prices. A lot of this hardware is good for entry-level businesses." (Charlotte) "We need specific startup grants that would go directly to small businesses for getting connected and getting the right software." (Asheville) "Part of the training should be low-cost follow-through service focused on security, troubleshooting and maintenance. We need to teach small businesses that technology is a tool that needs to be maintained." (Asheville)

Provide More Public Access for Small Businesses. Funds for more community facilities that offered free public access targeted to home-based businesses and other small businesses in distressed neighborhoods were also called for in Asheville and Wilmington, where geographic coverage of public access was considered inadequate. "We're working with the Northside group in developing their resource center. To take it to the next step, we would need people to provide peer training. We need startup money to buy equipment to get on-line and train people." (Wilmington) "Bringing high-speed to Asheville in a more significant way may depend on the public access training sites. A lot of SCORE client businesses could benefit from funding for additional education." (Asheville) A Wilmington participant came up with a novel solution to the geographic coverage problem of public access when he suggested that the local government provide a mobile public access computing facility, "… like the one they have in Washington D.C."

Improve Educational Offerings. A focus on improving educational offerings was a recurring theme. Suggestions fell along two lines: short courses and better preparation

to receive one-on-one counseling. Several groups felt that training sites needed to develop internet training courses that better addressed the time constraints of the business population they served. Thus there were calls for more one or two day short courses that could be offered to small business owners at convenient times like weekends in a variety of different venues. "We could use a model training curriculum both for a one day course or slightly longer that might go for a couple of Saturdays. Asheville Buncombe Tech could really use this." (Asheville) A second line of discussion dealt more with ensuring that small businesses had the appropriate preparation to get the most out of the one-on-one counseling that was offered at places like SCORE, the SBDTC, and other small business centers. "We need to direct people to classes as prerequisites for working with them extensively at the library." (Charlotte) "We counsel about 600 businesses a year and really push our (on-line tutorial) websites and seminars as preparation for counseling. If they do these things first, then the counselors can do so much more for them." (Asheville)

Improve Outreach. A final means identified for improving connectivity for small businesses in distressed areas of the city was to improve outreach, specifically in the form of internet self-help guides that also listed community resources for getting started. "I think something that would add value for many businesses in the community would be a self-help guide for how to get on the internet. A lot of people think it's really hard and they could overcome this notion in a heartbeat. It would be a ten to twelve point basic guide that would serve as a prerequisite to dealing with things that seemed like substantial problems to getting connected. Then these problems wouldn't seem so big. Another good thing about self-help material is that it's private and deals with the problem of embarrassment about not being on-line." (Wilmington)

How the e-NC Authority Can Contribute

Focus group participants identified a number of ways in which e-NC could assist local entities in providing greater connectivity to small businesses in distressed communities. They felt that e-NC was well positioned to provide assistance based on their small business experience in rural communities and statewide scope of activity.

Provide Research, Best Practices, and Model Case Studies. One of the major problems encountered by participants trying to serve the small business community in low-income areas was lack of knowledge. This included in-depth knowledge about the connectivity status and needs of the local population of small businesses. "We could use help in developing a centralized data base of small businesses for those (distressed) parts of the city." (Durham) A Charlotte participant elaborated on this theme: "we need to know what it is that people need. Is it hardware, technical assistance, basic skills? Who are the distressed small businesses and where are they? We need e-NC to assist us with gathering this data and disseminating it. Then we can develop solutions to connectivity needs." (Charlotte) Participants also felt e-NC could be helpful in providing model case studies (Durham), model training curriculum for short courses (Asheville), community toolkits (Wilmington) and a list of best practices from around the country (Charlotte). "E-NC could provide us with their research on best practices giving examples of connectivity programs that are working. This could show us how other large cities are making the transition to a connected small business community." (Charlotte) "E-NC could help us in our efforts to provide internet training resources for the entrepreneurship program that AB tech is starting in the middle schools and high schools. This program will focus on starting up businesses." (Asheville)

Provide Direct Funding of Programs. The focus groups identified a number of funding needs for e-NC to consider. These included funding connectivity outreach materials such as self-help guides and resources listings for computer training and technical assistance (Durham, Asheville), provision of start-up grants to small businesses for equipment and software purchases that would be locally administered (Charlotte, Asheville, Wilmington), funding start-up costs of public access in community facilities (Asheville, Wilmington) and funding of a centralized training and outreach coordinator (Charlotte, Wilmington). "E-NC could fund a technology person that could travel between satellite training locations and help small businesses by providing them some basic website templates. They could show them (small businesses) how to get their basic information – logo, brochure information and contacts - on the web. All the major hosting providers have templates, so maybe they could partner with someone like Yahoo

who would donate their templates to the cause. This would go a long way to breaking the fear barrier for developing websites." (Wilmington)

Address Other Needs. Other potential e-NC roles mentioned in the focus groups included: convening of a city small business advisory committee on connectivity needs (Durham), assistance in developing collaboration between the universities, large corporate sponsors and small business centers (Durham, Charlotte), lobbying for state tax credits for computer equipment purchases by small businesses in certain geographic locations within the city, (Charlotte), and assisting focus group participants in identifying state and federal funding opportunities for funding connectivity programs in their community (Charlotte, Wilmington).

CONCLUSION

The findings of this study clearly reflect the complex nature of the "connectivity problem" in distressed urban neighborhoods. Bringing high-speed internet service to the homes and businesses of the neighborhoods is a necessary but insufficient condition to ensuring their participation in the internet economy. The comments of the focus group participants confirm independent data that show extensive metropolitan coverage in the four study urban area by cable and DSL high-speed service providers that includes distressed neighborhoods. (Participants did mention that underserved areas continue to exist on the periphery of their urban counties – generally those areas that were more rural in nature.) Despite the widespread availability of high-speed service, few households and businesses in low income areas subscribe. The high cost and complexity of the technology were the recurring themes in our findings. Most households and small businesses in low-income areas feel they cannot afford the costs of purchasing and maintaining a computer, and particularly, the on-going monthly cost of high-speed internet service. Further, many households members and small business owners have low education levels generally and little experience with technology. This leads to a poor understanding of the potential benefits of internet usage to their particular circumstances and a powerful intimidation factor to getting started on the path of technology use. The focus groups were particularly concerned about the lack of computers/high-speed internet in the homes of families of school-aged children. While after-school programs went some way to filling the need, children without fulltime access to a computer were considered at higher risk for falling behind in school and not reaching their full scholastic potential. Many of the stakeholders felt that the long term implications of a significant portion of our high-school graduates not being fully versed in knowledge thinking and problem solving were very troubling for North Carolina's urban economies.

Our research indicates that a number of efforts are underway to improve connectivity in low-income neighborhoods. For residents, a few of these efforts focus on getting computers in the home, such as the provision of refurbished computers by government and private industry to families with school aged children. By far the most emphasis to-date, however, has been on the provision of public access computers in public libraries, after-school programs, job search agencies, community and recreation

centers, and a number of other venues. When coupled with training classes or one-on-one follow-up assistance, these programs *are* effective in introducing residents to the internet and giving them some rudimentary computer skills. The most successful and long-standing of these programs often involve combining the talents and resources of community groups, local government, educational institutions, and private industry such as the Dell Tech-Know program in Charlotte and the CTEP program in Durham.

Unfortunately, many residents do not come to public access sites until they have some just-in-time need such as applying for a job on-line or enrolling in an on-line training program as required by a potential employer. Assisting these individuals, many of whom are largely unfamiliar with computers and/or the internet, is a time consuming process that often exceeds what is available in terms of staffing at the public access sites or training centers. Participants were unconvinced that the recipients were able to build on these one-time interventions to integrate the internet into their everyday lives.

Although the demand for public access and internet training generally exceeded the supply as evidenced by long queues for computer use and waiting lists for training courses, large portions of the households in low-income neighborhoods are not being reached. These are disproportionately concentrated in the elderly population and minority population, particularly African-Americans and Latinos. The stakeholders we met with felt that additional resources needed to be targeted to these populations in a manner that addresses cultural differences, commonly shared fears and attitudes, and other barriers specific to these groups such as poor reading skills, lack of English language skills and physical disabilities.

For small businesses in low-income communities, the research found that those least likely to use the internet in their daily activities were businesses with older and/or minority owners, those with low barriers to entry such as housecleaning and painting businesses, those whose activities kept them primarily out of the office such as contractors and landscapers, and those that served primarily residents of low-income (local neighborhoods). Similar to the situation for low-income residents, many training computer and internet training facilities existed, but few of these were targeted to businesses in low income neighborhoods. Training on computer use, basic internet, and select business internet applications was available at community colleges, small business

development and technology centers (SBDTCs), community development corporation (CDC) business incubators, minority and women-owned business centers, Service Corp of Retired Executive (SCORE) offices, work-force development sites and in some cases, the public library. Participation in these programs by businesses in low-income neighborhoods was considered very low compared to their peers from the urban area as a whole. Reasons cited for poor participation included: lack of understanding of the benefits of technology, time constraints, the high up-front costs of incorporating technology in the business, mismatches between training programs and particular needs of businesses in low-income areas, and lack of coordinated outreach and referral.

GENERAL RECOMMENDATIONS FOR IMPROVING CONNECTIVITY AMONG RESIDENTS IN DISTRESSED AREAS

Reduce Costs

A number of participants felt that reducing the cost of monthly high-speed internet service to the homes of low-income families should be a long-term priority. Their suggestions for achieving this goal included increasing competition, investing in alternative technologies, and subsidizing the monthly fees of low-income residents. Participants also felt that policymakers needed to focus on decreasing the cost of acquiring and maintaining a computer in the home through such means as refurbished computer donation programs, low-interest financing and low-cost technical assistance.

Simplify the Technology

Several focus group participants made suggestions concerning the complexity of setting up and maintaining a computer and getting connected to the internet. These included investigating options such as “dumb-boxes” connected to central servers such as those employed in the Chapel Hill school system and web-TV technologies that would build on existing hardware in the homes of low-income residents. They also stressed the importance of providing low-cost computer maintenance service, as many low-income residents were said to abandon their computers when they malfunction.

Improve the Availability and Awareness of Public Access Sites

Many participants felt strongly that policymakers needed to increase the capacity of public access sites through better funding for hardware, staff, training materials and bandwidth. In Asheville and Wilmington, participants also felt that increasing the geographic reach of public access by opening more public access sites in distressed neighborhoods was essential. Participants in all focus groups stressed the need to increase awareness of existing facilities through coordinated referral and marketing efforts.

Mobilize and Coordinate Volunteer Resources

Focus group participants also felt that policymakers needed to capitalize on the wealth of "willing and able" technical people employed by private industry and higher education in urban areas to provide training and other connectivity assistance to low-income residents. They also expressed the related need of connecting organizations that serve the technology needs of low-income residents with these volunteers through a central clearinghouse or a city-wide volunteer coordinator.

IDEAS FOR HOW THE e-NC AUTHORITY CAN HELP TO IMPROVE CONNECTIVITY AMONG HOUSEHOLDS IN DISTRESSED AREAS

Provide First Steps

Several participants felt the e-NC Authority could help local communities to determine the initial steps that should be taken to address the problem of connectivity in their communities. Specifically, participants requested planning templates, information on best practices and model programs to help communities start new programs and improve existing programs. By capitalizing on e-NC's experience with programs in rural areas and its ability to gather information on urban practices across the country, participants felt their localities could avoid "reinventing the wheel.".

Meet Information Needs

Participants in all of the focus groups indicated a desire to have e-NC conduct research that collects data directly from the residents of the target neighborhoods. They stated that many of their fund raising and public awareness efforts are dependent on providing local data-based evidence of connectivity needs. Currently, much of this information was not available and resources at the local level were insufficient to conduct this type of research.

Provide Assistance with Grants

Participants stated that they would like the e-NC Authority to provide them with assistance in identifying grant sources and preparing grant applications. They also identified a number of grant needs and cost-reduction assistance that could come directly from e-NC. These included: 1) planning grants similar to those currently offered in rural North Carolina counties; 2) seed-money for pilot programs, especially those undertaken by public-housing entities and other community groups; 3) financial assistance in bulk-purchasing of hardware; 4) assistance in achieving rate reductions for internet service at public access sites; 5) funds for developing outreach materials; and 6) financial assistance in the development of more extensive municipal wireless networks.

Provide Coordination of Resources and Convening of Stakeholders

Several ideas surfaced in the focus groups about e-NC helping to coordinate resources and organizations working to improve connectivity issues in distressed neighborhoods. These included: 1) developing an umbrella organization to coordinate different public access centers and to be a source of shared information and practices; 2) providing a training coordinator, not necessarily tied to one agency that could provide assistance “out in the various communities”; and 3) developing a connectivity discussion and resource site on the internet for stakeholders throughout the city.

Raise the Priority of "Connectivity of Low-income Urban Residents" as a Political and Economic Development Issue

Participants in the focus groups felt strongly that an important role for e-NC was to assist local leaders in raising the visibility of "connectivity issues in distressed urban areas" at the state level. In this regard, participants felt that e-NC was best suited to "making the case" for the importance of connectivity to economic development in the state. Specifically, they requested that these efforts focus on increasing competition between internet providers, lowering barriers to entry for non-profit and municipal broadband providers, finding a "home" for a line-item in the state budget for connectivity, providing funding assistance for local Wi-Fi networks, and linking connectivity to existing community development programs.

GENERAL RECOMMENDATIONS FOR IMPROVING CONNECTIVITY AMONG SMALL BUSINESSES

Create Demand

Participants felt a major focus should be on creating the demand for high-speed internet among small businesses. This included showing small businesses the specific ways that they could benefit with examples from their peer group and a one-on-one review of the potential impact on their business. Customized training and outreach to specific industry groups (contractors, retailers, etc) was also suggested including teaching field-oriented businesses how to connect through mobile hardware such as cell-phones and PDA's, if appropriate.

Reduce Connectivity Costs

Another suggestion focused on marshalling more resources to try to reduce the costs of connectivity for small businesses. This included providing more attractively priced refurbished computers, offering start-up grants for getting connected and developing a website, and providing low-cost technical assistance focused on security, troubleshooting, and maintenance.

Provide More Public Access Sites for Small Businesses

Funds for more community facilities that offered free public access targeted to home-based businesses and other small businesses in distressed neighborhoods were called for in Asheville and Wilmington, where geographic coverage of public access was considered inadequate. Specifically, start-up funds were needed to buy equipment, get on-line and train staff.

Improve Educational Offerings

Participants called for better educational offerings through more short courses that accommodated the time constraints of small businesses. They also suggested developing a coordinated sequence of basic courses that provide the background needed for small businesses to meaningfully engage in the one-on-one counseling services that were available through venues such as SCORE and community college small business centers.

Improve Outreach

A final means identified for improving connectivity for small businesses in distressed areas of the city was to improve outreach. This involved obtaining more information about the small businesses in low-income neighborhoods in order to do better targeting of resources and programs. Participants also wanted a small business internet self-help guide that includes a listing of community resources to assist in getting connected.

IDEAS FOR HOW THE e-NC AUTHORITY CAN HELP TO IMPROVE CONNECTIVITY AMONG SMALL BUSINESSES IN URBAN AREAS

Provide Research, Best Practices, and Model Case Studies

Participants indicated that one of the major problems they encountered in trying to serve the small business community in low-income areas was their own lack of knowledge. This included in-depth knowledge about the connectivity status and needs of the local population of small businesses including those that were home-

based and those that were mobile. Participants requested that e-NC assist them in developing a centralized data base of small businesses located in the distressed parts of their cities. Participants also felt e-NC could be helpful in providing model case studies, model training curriculum for short courses, community toolkits and a list of best practices from around the country.

Provide Direct Funding of Programs

The focus groups identified a number of funding needs for e-NC to consider. These included funding connectivity outreach materials such as self-help guides and resources listings for computer training and technical assistance, provision of start-up grants to small businesses for equipment and software purchases that would be locally administered, funding start-up costs of public access in community facilities, and funding of a centralized training and outreach coordinator.

Address Other Needs

Other potential e-NC roles mentioned in the focus groups included: convening of a city small business advisory committee on connectivity needs, assistance in developing collaborations between the universities, large corporate sponsors and small business centers, lobbying for state tax credits for computer equipment purchases by small businesses in certain geographic locations within the city, and assisting focus group participants in identifying state and federal funding opportunities for funding connectivity programs in their community.

In conclusion, there is a lot of effort on the part of public, non-profit and private organizations focused on expanding access and usage of high-speed internet among those in distressed areas of the cities studied. There is still much to be done, however, to close the gap in high-speed internet usage between households and small businesses in distressed communities and those in the general population. Closing that gap is essential to the economic fortunes of both distressed neighborhoods and their larger communities. The organizations working on this issue at the local level would welcome the involvement of the e-NC Authority in helping them achieve this important goal.

APPENDIX I

FOCUS GROUP QUESTIONS CONNECTIVITY IN NORTH CAROLINA'S DISTRESSED URBAN AREAS

Group I: Connectivity of Households

Focus group participants consisted of representatives from consumer advocacy and community development organizations (public, non-profit, faith-based, etc.), and staff of public access sites, existing technology training programs, and local government/service providers.

Part A: Questions on the Current State of Household Connectivity in Distressed Urban Neighborhoods

1. How would you describe the availability of high-speed internet service for households in the distressed neighborhoods of your community?

> Prompts: Neighborhood differences, DSL, Cable or other, market competition, internet provider support

2. For households with availability, how many are taking advantage of these services?

> Prompts: Overall participation by type of service as well as differences by age, race, employment and family status, income/education levels

3. What current internet applications are being used by connected households in distressed neighborhoods?

> Prompts: Communication (e-mail), e-government (bill paying, inquiries, etc.), remote access to employer networks, social services, medical information, distance learning, shopping, job search, entertainment. Differences in usage between household members.

4. What programs/initiatives are you aware of in your community to increase connectivity and digital literacy? How effective are these?

> Prompts: Outreach, public access, digital literacy training, cost reduction

5. What public access sites are available in your community and how are they utilized?

> Prompts: Awareness, convenience, staffing, cost. Also - other places that household members access the internet – work, schools, friends/family

Part B: Questions on Needs and Recommendations for Household Connectivity in Distressed Urban Areas

6. What are the major barriers to more extensive and effective internet usage by household residents of distressed neighborhoods?

Prompts: Availability, cost, hardware, literacy/language, handicaps, fear/disinterest, social networks

7. What needs to be done to remove those barriers?

Prompts: more public access, targeting of e-government, cost reduction efforts, training in internet applications (email, e-government, job search, medical information, general web surfing, distance learning, other), on-going support

8. Who needs to be involved in these efforts?

Prompts: Community groups, local government, schools, employers, other

9. How might e-NC be helpful in improving high-speed internet availability and usage among household residents of distressed neighborhoods in this community?

Prompts: Convening interested parties, providing information, advocacy, small grants or planning grants, technical support, other.

Group II: Connectivity of Small Business

Focus group contained representatives of economic and community development organizations (chamber of commerce, city economic development office, downtown development corporations), local community development financial institutions (e.g. Self-Help), small business and technology development centers (SBA), small business counselors (SCORE, minority/women owned businesses), state/local government business service providers (e-procurement, office of IT services, etc.) and other relevant organizations servicing the technology needs of small businesses in distressed urban neighborhoods.

Part A: Questions on the Current State of Connectivity for Small Firms and Providers of Business Services in Distressed Urban Neighborhoods

1. How would you describe the availability of high-speed internet service for small firms in the distressed neighborhoods of your community?

Prompts: Neighborhood differences, physical characteristics of the building stock, type of service - DSL, Cable, T1, wireless or other, market competition, internet provider support.

2. For small firms with availability, how many are taking advantage of these services?

Prompts: Overall participation by type of service and differences by firm employee size, industry, clustering or concentration, age/stage in life cycle. Reasons for differences.

3. Where can small firms in your community receive technical assistance and employee training for internet applications and/or access the internet outside their own facilities? Which of these are most effective?

> Prompts: Small business incubators, local universities and community colleges, SBA offices, non-profit or private business consultants

4. What types of e-business and e-government applications are most prevalent? the least?

> Prompts: E-business: communications, marketing and sales, procurement, finance and accounting, human resources, research, access to clearinghouse sites for contracting opportunities, capital sourcing, industry networking, other.
> E-government: bill paying, licensing and permitting, local state, regulation and tax information, on-line data bases, technology and export assistance, other.

Part B: Questions on the Needs and Recommendations for Small Firm Connectivity in Distressed Urban Neighborhoods

5. What are the major barriers to more extensive and effective internet use by small firms in distressed urban neighborhoods?

> Prompts: availability, cost of new infrastructure, service and training, time to implement, lack of relevant applications, low technical skills of management and/or personnel, security concerns, on-going support services.

6. What can be done to overcome those barriers?

> Prompts: more public access/training, targeting and outreach, cost reduction efforts, training in internet applications, on-going support

7. Who needs to be involved in these efforts?

> Prompts: services/programs of local governments, educational institutions, SBA, community development corporations, non-profit and private business consultants, other

8. How might e-NC be helpful in improving high-speed internet availability and usage among small businesses in this community?

> Prompts: Convening interested parties, providing information, lobbying, small grants and planning grants, technical support, other.